



Nozzles designed to fuel tomorrow's clean energy vehicles

Manual P/N C01341

Rev. B

# JC Carter LLC LNG Couplings

## USER MANUAL



## 10 GPM Small Single Line Cryogenic Coupling

### Models 50E722 Nozzle and 50E721 Receptacle

### User's Manual and Installation Guide

Rev. B

**! Warning: Read the User's Manual and Installation Guide.  
Follow all warning and safety instructions. Failure  
to do so may result in serious injury.**



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## Introducing the JC Carter LNG Couplings

Thank you for selecting JC Carter LNG Couplings.  
JC Carter Couplings offer the following features:

- Diametrical seals prevent liquid leakage while refueling
- No nitrogen purging is required for proper operation
- Couplings are easy to use and maintain
- Unique, freeze-free fueling allows removal of nozzle from the receptacle under most weather conditions
- Simple hose and line connections
- Safety features prevent fuel flow while couplings are disconnected
- Durable design protects against damage in the field
- Extensive life-cycle testing has shown the coupling to be reliable and long-lasting

**! Attention:** This symbol will be used to point out important safety instructions.  
Please read this manual carefully before using couplings.



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## Warnings and Safety Instructions

### **! Operator Safety:**

1. Always wear protective clothing consisting of the following:
  - Full face shield
  - Thermal gloves rated for cryogenic use
  - Cryogenic smock
  - Solid shoes capable of withstanding cryogenic spillage
2. Read the User's Manual and Installation Guide completely before operating coupling.
3. Keep area of operation clear of all persons other than operator.
4. Use coupling only as described in this User's Manual, failure to do so may result in serious injury.
5. Do not use any attachments or accessories with coupling not supplied by JC Carter.
6. Do not operate coupling if damage has occurred. If damage has occurred use only JC Carter or JC Carter's approved source for repairs.
7. Maintenance and repairs should be done only by trained personnel using genuine JC Carter supplied replacement parts. Failure to comply will void the JC Carter warranty and exclude JC Carter from any responsibility.



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## Description

### **The Refueling Nozzle:**

JC Carter model 50E722 is the nozzle half of the liquefied natural gas (LNG) coupling. The single line cryogenic nozzle is intended for use in no-vent LNG fuel systems. Features of this nozzle include an independent shut-off valve located in the flow path within the nozzle. To refuel the LNG fueled vehicle, the operator mates the nozzle with the receptacle located on the vehicle and turns the nozzle ¼ turn in the clockwise direction. This process also begins the flow of the fuel through the coupling. By rotating ¼ turn in the counter clockwise direction, the operator terminates the flow and unlocks the nozzle from the receptacle.

### **The Refueling Receptacle:**

JC Carter model 50E721 is the mating receptacle portion of the LNG fueling coupling. The receptacle mounts on the LNG fueled vehicle, and the nozzle mates with it to refuel the vehicle. The receptacle contains an independent primary shut-off valve.



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## **Installation Tools and Accessories**

### **Tools:**

Pipe Wrench 1 Ea.

Adjustable Wrench 2 Ea.

### **Accessories:**

Pipe sealant AR

Straight Adapter, 1/2" Pipe to Tube 1 Ea.

1-5/16" – 12 Jam Nut Supplied with Receptacle 1 Ea.

Washer Supplied with Receptacle 1 Ea.



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## Specifications

**! Caution: Failure to adhere to the specification limits of this coupling may result in injury.**

Fluid Compatibility: LNG, Methane and LN<sub>2</sub>

Maximum Refueling Pressure: 250 psig

Maximum Working Pressure: 500 psig

Burst Pressure: 1500 psig

Rated Flow: 10 Gallons per Minute

Receptacle Weight: 0.4 Lbs

Nozzle Weight: 1.2 Lbs

Operating Temperature: -320°F to +120°F

Storage Temperature: -60°F to + 120°F

Spillage on De-Mating: < 1cc

Leakage While Fueling: None



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## Nozzle Installation

### Step 1:

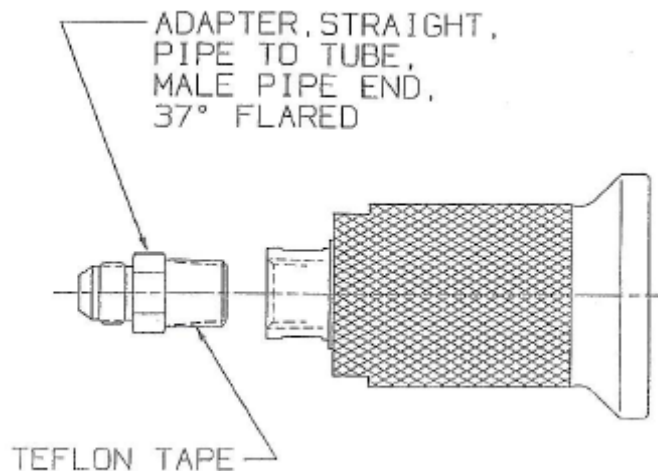
**! Caution: Open nozzle package only in a dry, protected area. Do not allow water or other contaminants to enter the internal mechanism of the coupling.**

Purge the LNG system fill line with gaseous Nitrogen to remove any contamination or water that may reside in the LNG system fill line.

### Step 2:

Remove the nozzle from the sealed shipping bag and the shipping plug from the nozzle port. Wrap Teflon tape in the clockwise direction on the straight adapter (2 revolutions). Thread the straight adapter into the nozzle port, torque the adapter to 40-50 ft-lbs.

**! Caution: Failure to remove contaminants or moisture may affect the performance of the LNG coupling.**







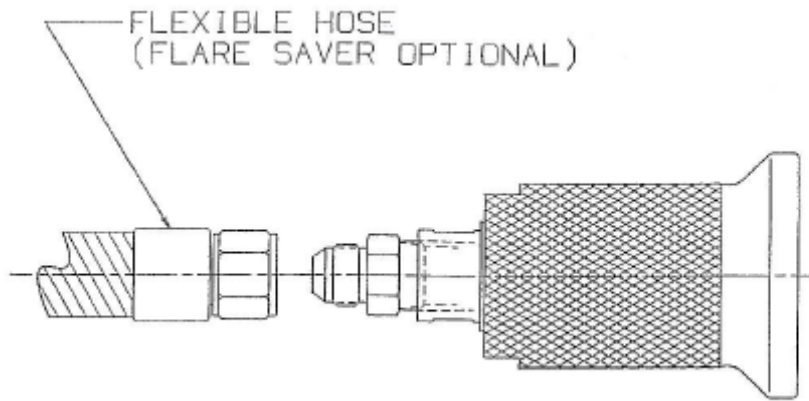
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### Step 3:

Thread the female station hose termination onto the straight adapter; torque the connection to 115-125 ft-lbs.



### Step 4:

**! Caution: This step is critical in assuring the safe performance of the LNG coupling.**

Perform leak test of the LNG coupling, filling hose and adapters by pressurizing the upstream side of the filling station hose to 250 psig with Nitrogen gas. Verify the system is free from any leakage.



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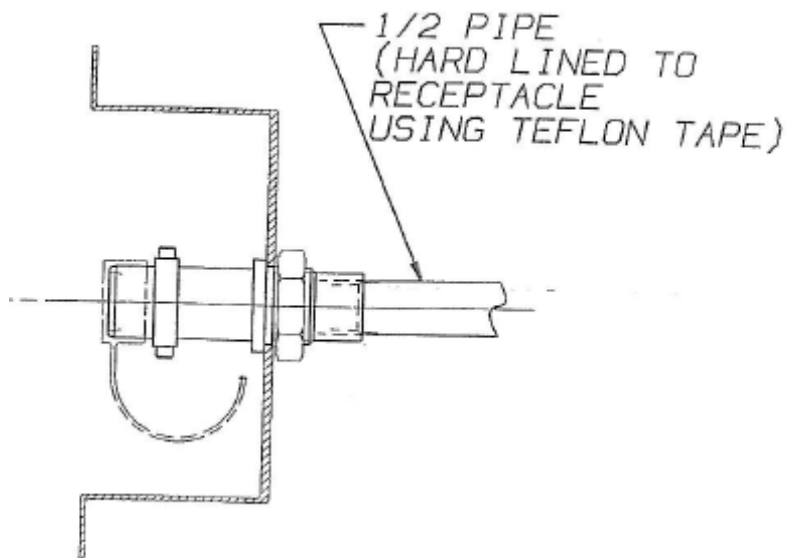
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## Receptacle Installation

### Step 1:

**! Caution:** Open receptacle packaging only in dry, protected area. Do not allow water or other contaminants to enter the internal mechanism of this coupling.

Remove the receptacle from the sealed packaging and remove the shipping plug from the receptacle outlet port. Mount the receptacle in the receptacle housing on the vehicle using the lockwasher and jam nut; torque the jam nut to 40-50 ft-lbs.





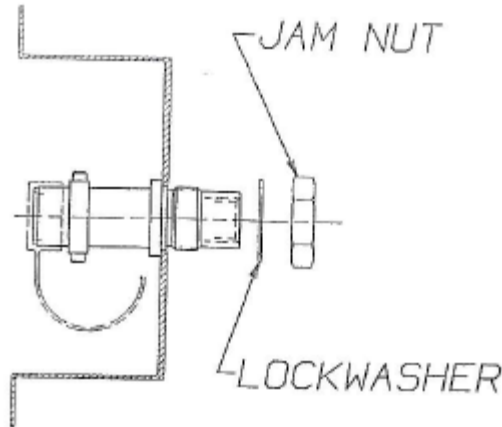
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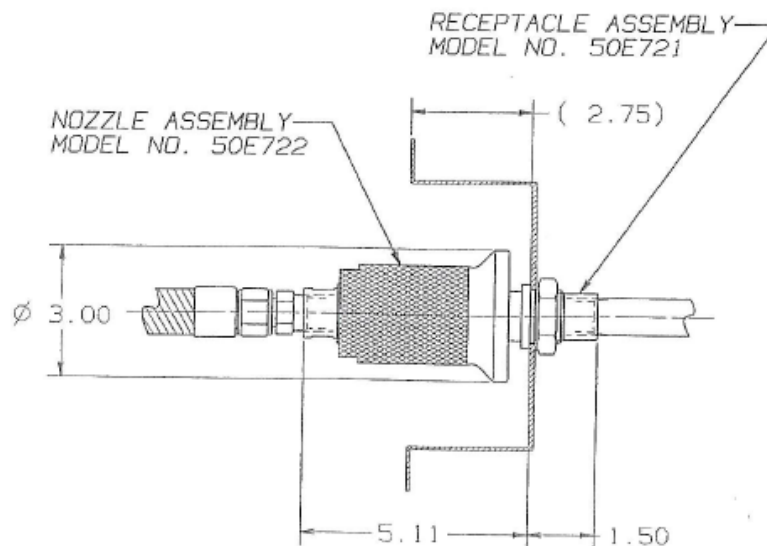
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## Step 2:

Wrap Teflon tape around the male threaded termination of the vehicle fuel line (2 rotations). Thread the vehicle fuel line onto receptacle port; torque the connection to 115-125 ft-lbs.



The following figure illustrates the clearance needed to allow proper nozzle to receptacle connection. Select an appropriate location to mount the receptacle based on the envelop definition figures. Combined nozzle/receptacle dimensions are shown below.





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## Operating Instructions

**! Caution:** The operator must wear the protective clothing outlined in the Warnings and Safety Instructions on page three (3) of this manual. Failure to do so may result in injury. Never point the nozzle directly at yourself or others at anytime.

### Step 1:

Put on the following protective clothing:

- Full face shield
- Thermal gloves rated for cryogenic use
- Cryogenic smock
- Solid shoes capable of withstanding cryogenic spillage

### Step 2:

If this is the first fueling of the day, check to be sure no fuel pressure is present at the nozzle. Then wipe out the mating end of the nozzle using a clean, dry cloth.

### Step 3:

Insert the nozzle into the receptacle far enough for the locking pins on the receptacle mechanism to engage with the slots on the nozzle.

### Step 4:

Rotate the nozzle by hand  $\frac{1}{4}$  turn clockwise to start fueling.

**! Caution:** Before removing the nozzle from the receptacle, the LNG supply should be turned off.

### Step 5:

To stop fueling rotate the nozzle by hand  $\frac{1}{4}$  turn counter clockwise and remove the nozzle from the receptacle.



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**Step 6:**

Close the cover on the receptacle box, or replace the protective dust cap. Store the nozzle in a protected location.



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## Maintenance Schedule

Please note that JC Carter recommends the following maintenance schedule be followed to ensure trouble free operation and maximum life. Failure to follow the schedule may result in less than optimal performance or reduced operating life. All kits described in this section may be ordered by contacting JC Carter directly at +1 (949)764-2200.

### Daily Maintenance:

At the start of each fueling day:

- Check to be sure no pressure is present in the nozzle
- Clean out the mating end of the nozzle with a clean, dry cloth.

### Each Fueling:

Before each fueling:

- Clean out the cup of the receptacle with a clean dry cloth.

### 3 Months or 9,000 Fuelings:

Remove and replace the nozzle retaining rings, nozzle seals, and nozzle seal retainers.

### 36,000 Fuelings:

Perform 36,000 fuelings repair as well as replacing all nozzle linkage bushings. Use only JC Carter parts.